

Tricuspid Valve Dysplasia in Dogs

What is tricuspid valve dysplasia?

Tricuspid valve dysplasia (TVD) is a congenital cardiac anomaly, or an abnormality in the heart that is present at birth, rather than beginning later in life. Specifically, TVD is characterized by abnormal formation of one of the four valves in the heart, namely the tricuspid valve. This valve is located on the right side of the heart between the first chamber (the right atrium) and the second chamber (the right ventricle). Normally a one-way valve, its job is to freely allow blood to flow forward from the right atrium into the right ventricle, and to prevent flow in the opposite direction. In dogs with TVD, some blood is permitted to “leak” backward from the right ventricle into the right atrium. This is called tricuspid valvular regurgitation, or simply **tricuspid regurgitation**.

Over time, the extra volume of blood backing up into the right atrium causes enlargement of this chamber. Eventually, if the amount of regurgitation of blood through the tricuspid valve is severe, blood may back up still further and cause fluid buildup in the chest or abdominal cavities. This is called *congestive heart failure*. Enlargement of the right atrium can also lead to *arrhythmias*, or abnormalities in the electrical activity of the heart.

How is TVD diagnosed?

A congenital heart condition is often first suspected following detection of a heart *murmur* during routine **physical examination** in a young dog. This is an abnormal “whooshing” sound associated with the normally crisp heart sounds, heard while listening to the heart with a stethoscope. The murmur is described according to its loudness and where it is best heard on the chest. Although many conditions result in the presence of a murmur, the location where it is loudest and the breed of the dog may raise suspicion for TVD in particular.

Diagnosis of TVD is confirmed by performing an **echocardiogram**. This is an ultrasound examination of the heart, during which information is collected about the size, structure, and function of the heart. This information is used to confirm the presence of TVD, determine its severity, and decide whether or not specific therapy is necessary. Specific echocardiographic findings in dogs with TVD may include thickening or abnormal motion of the tricuspid valve leaflets, tricuspid regurgitation, and enlargement of the right atrium (the chamber of the heart that receives the regurgitant blood).

Chest x-rays are used to obtain a “big picture” view of the heart and to look for evidence of congestive heart failure. An **electrocardiogram** is performed to identify and characterize arrhythmias that may be present, and to guide antiarrhythmic therapy if necessary. Depending on the specific situation, blood work may be recommended as well. Some of these tests may need to be repeated periodically in order to monitor progression of the condition and its response to therapy.

How is TVD treated?

Dogs with mild forms of TVD may not require any therapy. For those with moderate to severe forms of TVD based on presence of symptoms or echocardiographic abnormalities, medical therapy may be recommended in an attempt to relieve symptoms and delay or prevent the onset of congestive heart failure.

Dogs that develop congestive heart failure may require removal of fluid from either the chest or abdominal cavity in order to relieve symptoms. This is called *thoracocentesis* when fluid is removed from the chest cavity, and *abdominocentesis* when fluid is removed from the abdominal cavity. Medical therapy is also begun, including medications that remove excessive fluid from the body and facilitate forward blood flow through the body's blood vessels. If an arrhythmia is detected, an antiarrhythmic medication may be prescribed depending on the severity of the rhythm disturbance.

What is the prognosis? What should I watch for?

Dogs with mild forms of TVD may remain asymptomatic, with the only evidence of the condition being the heart murmur detected during physical examination. Those with more severe forms of TVD may develop symptoms, the nature and severity of which depend upon how the condition progresses. **Exercise intolerance** or **lethargy** may be noted. If congestive heart failure develops, **abdominal distension** may be seen if fluid accumulates in the abdominal cavity. **Loss of appetite** may also occur due to discomfort associated with the distended abdomen. If fluid accumulates in the chest cavity, **rapid** or **labored breathing** may be observed, and the tongue or gums may take on a **blue** color. If arrhythmias develop, **weakness** or **fainting** may occur. Finally, potential side effects of the medications used to treat TVD and congestive heart failure may overlap with those already discussed, such as lethargy, loss of appetite, and weakness.

Changes in medication administration should always be discussed first with a doctor. If any of the above symptoms are noted, or if you have any questions or concerns, please call your veterinarian or Dr. Marshall at Veterinary Specialty Services immediately to discuss an appropriate plan. Problems that are caught early are more easily corrected and less likely to require a visit to the hospital. If you feel that the problem should not wait and requires immediate attention, then an emergency visit is warranted.